

CLAIMS

1. A mobile router device, to which at least one terminal device attaches,
connects a backbone network to a mobile network moving within the backbone
5 network, the mobile router device comprising:

a means for determining whether or not the mobile router device
works as a master router that can connect the mobile network to the backbone
network;

a means for recording a virtual address common to respective
10 mobile router devices attaching to the mobile network, and producing a care of
address with respect to the virtual address and usable by the mobile router
device per se at a location to which the router device moves; and

a means for generating and transmitting a binding update message
which makes the virtual address corresponding to the care of address when the
15 mobile router device works as the master router.

2. The mobile router device of claim 1, wherein the virtual address is
used as a real address assigned to any one of the respective mobile router
devices attaching to the mobile network.

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3. The mobile router device of claim 1 further comprising:

a means for monitoring quality of a link connected to the backbone
network;

a means for changing a priority which determines the master
25 router and a backup router in response to the quality of the link; and

a means for determining whether or not the mobile router device
per se works as the master router in response to the priority.

4. The mobile router device of claim 1 further comprising a means for storing a sequence number of the binding update message into a master router advertisement packet and for transmitting the packet when the mobile router
5 device works as the master router.

5. The mobile router device of claim 4, wherein the master router advertisement packet uses a virtual router advertisement in accordance with a virtual router redundancy protocol.
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6. The mobile router device of claim 4, wherein the master router advertisement packet uses IPv6 router advertisement message.

7. The mobile router device of claim 1 further comprising:
15 a means for receiving a master router advertisement packet which is transmitted by another mobile router device and notifies the mobile router device of the another mobile router device working as the master router; and
a means for recording a sequence number of the binding update message contained in the master router advertisement packet received in order
20 to use the sequence number for a case when the mobile router device per se becomes the master router,
when the mobile router device works as a backup router.

8. The mobile router device of claim 7, wherein the master router advertisement packet uses a virtual router advertisement in accordance with a
25 virtual router redundancy protocol.

9. The mobile router device of claim 7, wherein the master router advertisement packet uses IPv6 router advertisement message.

10. A mobile network system comprising:

5 a plurality of the mobile router devices as defined in claim 1;
 at least one terminal device attaching to the mobile router devices;
and
 a home agent device for managing movements of the mobile router devices.

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11. The mobile network system of claim 10, wherein at least one of the mobile router devices has a physical interface to a backbone network, a type of which interface is a different from those of other mobile router devices.

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12. The mobile network system of claim 10, wherein each one of the mobile router devices uses a virtual address common to the others at a side to a backbone network and implements a virtual router redundancy protocol at a side to a mobile network, wherein when one of the mobile router devices works as a master router, the master router uses the common virtual address for
20 communication.

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13. The mobile network system of claim 12, wherein one of the mobile router device working as the master router uses the common virtual address and a care of address generated corresponding to the common virtual address
25 for transmitting a binding update message to be used for a mobility management to the home agent device.

14. A mobility management method of a mobile router device attaching to a mobile network system, which system comprising:

at least one terminal device;

a mobile network including a plurality of mobile router devices,
5 to which the terminal device attaches, for coupling the mobile network to a backbone network; and

a home agent device for associating a home address with a care of address and managing both of the addresses,

wherein when the mobile network is connected to a home network
10 and when one of the mobile router devices working as a master router is to still work as the master router after a movement, the management method associates a care of address corresponding to a virtual address generated after the movement with the virtual address and registers the care of address with the home agent device, or when one of the mobile router devices working as a
15 backup router is to become the master router after the movement, the managing method associates the care of address corresponding to the virtual address generated after the movement with the virtual address and registers the care of address with the home agent device.

20 15. The mobility management method as defined in claim 14, wherein the virtual address is any one of physical addresses to be used in physical interfaces, to the backbone network, when each one of the mobile router devices attaching to the mobile network is connected to the home network.

25 16. The mobility management method as defined in claim 14, wherein the method puts the virtual address and a sequence number of a binding update message to be transmitted to the home agent device into a master router

advertisement packet to be transmitted to the mobile network for notifying the home agent device of the mobile router device being to work as the master router.

5 17. The mobility management method as defined in claim 16, wherein the master router advertisement packet is a virtual router advertisement packet to be used by a virtual router redundancy protocol implemented in the mobile router device at a side to the mobile network.

10 18. The mobility management method as defined in claim 16, wherein the master router advertisement packet includes IPv6 router advertisement message to be transmitted from the mobile router device working as the master router to a side of the mobile network of the mobile router device.

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